Computer Graphics in Europe
Guest Editors' Introduction

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Graphics work in Europe. Clockwise from top left: Rutherford Appleton Laboratory, Oxfordshire, UK; University of Linkoping, Sweden; CERN Laboratory, Geneva; and Technical University Darmstadt, West Germany.

Ever two years IEEE CG&A devotes a special issue to computer graphics in Europe. Since our last special issue in July 1984 we have seen computer graphics established as a widely accepted technology and a necessary tool in many application areas. Most countries now have a computer graphics industry of their own to supplement vendors of imported products. In the United Kingdom and West Germany more than 100 companies in each country develop and sell their own hardware and software products. Norway, a country of four million people, has about 30 such companies, and more are founded every month. While CAD/CAM was the driving application area for graphics technology in previous years, the push is now coming from several areas, such as technical publishing, medical applications, cartography, database construction, robotics, and multimedia systems.

The articles in our special issue reflect this diversity, which is ultimately strengthening computer graphics, making its use more and more economical in almost any application. The first article, by R. Lenz, B. Gudmundsson, B. Lindskog, and P. Danielsson of Linkoping University in Sweden, describes the application of computer graphics in the processing and display of 3D imagery (density volumes). J. Bettels and D. Myers describe a fascinating application of computer graphics in high-energy particle physics experiments being conducted at the CERN laboratory in Geneva, Switzerland.

The next article by A. Williams is about research to improve user interface design, a project of the Rutherford Appleton Laboratory in the UK. Williams discusses the suitability of GKS, a window manager, and other standard software modules as a basis for application system construction and user-interface management.

The fourth article is a timely discussion of compatibility issues between GKS and PHIGS. J. Schoenhut, a convener of the Computer Graphics Working Group of the ISO, offers suggestions on how to approach solutions to current problems. We in Europe believe that continued work in standards is vital to the proliferation of computer graphics, as is the provision of reliable, high-quality workstations at an affordable price. Most European vendors now offer systems with GKS and GKS-compatible interfaces in their graphics applications.

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It is just this kind of workstation that is described in our next article, by M. Goebel and D. Kroemer. Their GKS workstation is based on a multi-microprocessor and uses principles of functional distribution.

R. Hersch from the Swiss Federal Institute of Technology winds up our special issue with an algorithm for contour filling of partly degenerated shapes. The proposed approach unifies solutions to the singularity, discretization, and degeneration problems.

We believe these six articles give a good idea of the R&D work and applications of computer graphics in Europe. We thank the authors for submitting the material and the IEEE Computer Society for publishing them. We hope you are encouraged to read about the exciting developments.

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Encarnacao holds a diploma and a doctorate in electrical engineering from Technische Universität in Berlin. He has written textbooks on computer graphics and on CAD. He is editor-in-chief of Computer & Graphics, on the editorial board of IEEE CG&A, and West German representative of the IFIP TC5 working group. His address is Technische Hochschule Darmstadt, FB 20 FG GRIS, Alexanderstr. 24, D-6100 Darmstadt, West Germany.

Frank Lillehagen is president of METIS A/S, a Norwegian vendor of software and databases for mechanical CAE. He has been involved with design and manufacturing applications since 1969. Prior to his current position, he held several management positions at the Center for Industrial Research (S1) in Oslo, conducted engineering research in machine building, and managed the development of many industrial CAD/CAM systems. Lillehagen was one of the founders of ICAN, where he served from 1980 to 1984 as CAD/CAE manager.

He received a bachelor's degree in electronic design from the University of Strathclyde, UK, and an MSc in computer science from the University of Utah. He is a member of the Eurographics Executive Committee and the IEEE CG&A editorial board. His address is METIS, PO Box 149, N-3191 Horten, Norway.

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